

Abstracts

These selected abstracts and titles from the world literature are arranged in the following sections:

Syphilis and Other Treponematoses

(Clinical and Therapy; Serology and Biological False Positive Phenomenon; Pathology and Experimental)

Gonorrhoea

(Clinical; Microbiology; Therapy)

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Candidosis

Genital Herpes

Other Sexually-Transmitted Diseases

Public Health and Social Aspects

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Syphilis and other treponematoses (Clinical and therapy)

Penicillin Treatment of Neurosyphilis. Are Recommended Dosages Sufficient? YODER, F. W. (1975) *J. Amer. med. Ass.*, **232**, 270

A patient with symptomatic neurosyphilis who presented with failing vision due to optic atrophy was put on daily intramuscular injections of 600,000 units aqueous procaine penicillin G. His blood showed a positive rapid plasma reagin test 1:16 and a positive FTA (ABS) test. The cerebrospinal fluid (CSF) was inactive but the VDRL and FTA (ABS) tests were positive.

On the fifth day of treatment the serum penicillin G concentration 3 hrs after the injection of penicillin was 2 IU/ml., but its level in the CSF at this time was less than 0.017 IU/ml. Treatment was changed to aqueous penicillin G, 4 m.u. intravenously every 4 hrs for 15 days, and on the fifth day the CSF penicillin level was 0.31 IU/ml. 2 hrs after an intravenous injection. There was subjective and objective improvement in the patient's vision after 10 days of intravenous penicillin, but this improvement could have been due to dexamethasone which had been given orally for 5 days.

The author feels that the treatment of neurosyphilis with penicillin should be investigated further as a treponemacidal level of penicillin was not achieved in the CSF in this case after the use of generally accepted doses of procaine penicillin for this condition. C. S. Ratnatunga

Syphilis (Serology and biological false positive phenomenon)

A More Complete Evaluation of the Color-Coded Antigen for the Automated Reagin Test

LAMBERT, N. G., and STE-MARIE, A. R. (1975) *J. clin. Microbiol.*, **1**, 390

Syphilis (Pathology and Experimental)

***Treponema pallidum* (Nichols strain) in Tissue Cultures; Cellular Attachment, Entry, and Survival** FITZGERALD, T. J., MILLER, J. N., and SYKES, J. A. (1965) *Infect. and Immun.*, **11**, 1133

Nichols strain *Treponema pallidum* suspended in normal rabbit serum were only 50 per cent. motile after 4 hrs when exposed to air. A similar suspension incubated with testicular tissue components remained 50 per cent. motile after 22 hrs. This difference was not found when the suspensions were incubated anaerobically. Cell monolayers derived from rabbit testis prolonged survival; this was shown to be due to the cells themselves and not to released cellular components.

Treponemes incubated with testicular cell monolayers or ME 180 cell cultures (derived from a human cervical carcinoma) showed a drop in the number of motile treponemes due to attachment to, or penetration into, cells. Within 3 hrs treponemes were associated with 25 to 50 per cent of the cells. This drop in numbers was not found with killed *T. pallidum* or with two strains of non-pathogenic tre-

ponemes. The cell-associated *T. pallidum* retained their virulence for at least 24 hrs. Addition of superoxide dismutase to infected cell monolayers prolonged the motility and infectivity of *T. pallidum* when incubated aerobically. A. E. Wilkinson

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Inactivation of *Treponema pallidum* by Silver Sulfadiazine CHANG, T.-W., and WEINSTEIN, L. (1975) *Antimicrob. Agents Chemother.*, **7**, 538

Gonorrhoea (Clinical)

Disseminated Gonorrhoea: Diagnosis through Contact

Tracing MENDELSON, J., PORTNOY, J., ABEL, T., and STEINMAN, R. (1975) *Canad. med. Ass. J.*, **112**, 864

In this paper four male heterosexual patients with arthritis are described. Although the arthritis was thought clinically to be gonococcal in nature, *Neisseria gonorrhoeae* was not isolated from any of several sites. Other causes of arthropathy had been excluded and the response to penicillin treatment was excellent. In each of the female contacts of these men examination revealed the presence of *Neisseria gonorrhoeae* in the genital tract.

The difficulties involved in making a bacteriological diagnosis of disseminated gonococcal infection are discussed and the importance of examination of sexual contacts of patients with presumptive gonococcal septicaemia is stressed.

One point of criticism which might be made is that no mention is made of

the simple but useful technique of examining a morning urethral smear in the male after asking the patient to hold his urine overnight.

A. McMillan

HL-A 27 (W27) Absent in Gonococcal Arthritis WAGNER, L. P., and FESSEL, W. J. (1975) *Lancet*, 1, 1094 (letter)

Gonorrhoea (Microbiology)

Studies on Lipopolysaccharides isolated from Strains of *Neisseria gonorrhoeae*

STEAD, A., MAIN, J. S., WARD, M. E., and WATT, P. J. (1975) *J. gen. Microbiol.*, 88, 123

Lipopolysaccharides (LPS) were extracted from two colony type 1 (virulent) and three colony type 4 (avirulent) strains of gonococci and from one which was insensitive to penicillin. A phenol-water extraction method was used, followed by purification with ribonuclease. The preparations contained glucose, galactose, glucosamine, heptose, 2-keto-3-deoxyoctonic acid, and phosphate. The lipid A portion from all five strains contained glucosamine linked to phosphate groups and fatty acids, mainly hydroxy-acids. No significant differences were found between the fatty acids from virulent or avirulent strains or between strains sensitive or insensitive to penicillin. The composition is similar to that found in commensal *Neisseria*; this and the lack of O-antigen side-chains suggests that LPS will not be helpful as antigens for serological tests or as a basis for typing strains. The LPS preparations were lethal to mice with an LD₅₀ of 4 to 16 µg./kg. when given with an immunosuppressant, actinomycin D. It is not known if LPS plays a part in virulence, but electron micrographs have shown that growing gonococci bud off large amounts of outer envelope; these must contain the endotoxin, and the material could be involved in the interaction with the host.

A. E. Wilkinson

Strain-Specific Virulence-Associated Antigen of *Neisseria gonorrhoeae*

PIERCE, W. A., LEONG, J. K., and HOUGH, D. M. (1975) *Infect. and Immun.*, 11, 898

A new strain-specific gonococcal antigen is described by a group in

New Orleans using ultrasonic extraction. This antigen was found only in colony types T1 and T2 of Kellogg's strain F-62. Eleven other isolates were examined by immunodiffusion against absorbed anti-F-62 T2 rabbit serum and a possible reaction of partial identity occurred in only one strain. The new antigen was shown to be distinct from endotoxin and the toxic protein described by Cheng in type 1 colonies, and did not appear to be derived from pili.

This work represents another step in the long road towards understanding the properties of the gonococcus which render it virulent.

Brian Evans

Effects of Bicarbonate on Growth of *Neisseria gonorrhoeae*: Replacement of Gaseous CO₂ Atmosphere

TALLEY, R. S., and BAUGH, C. L. (1975) *Appl. Microbiol.* 29, 469

The strains of *N. gonorrhoeae* studied were isolated on Transgrow agar and subcultured on a medium containing haemoglobin, VCN, and isovitalax. The ability of NaHCO₃ to enhance growth was examined using broth and semi-solid media containing VCN and isovitalax.

For one non-CO₂-dependent strain the authors found that the incorporation of 0.009 M NaHCO₃ decreased the lag phase and promoted greater total growth. For one other strain of *N. gonorrhoeae*, the concentration of NaHCO₃ in semi-solid media required to support growth in air appeared to be dependent upon the volume of the air space above the medium. For this strain growing in a closed 2 litre container, the NaHCO₃ concentration required was 0.072 M, while plates incubated in individual plastic bags required only 0.009 M. No growth was obtained in air unless NaHCO₃ was incorporated into the media.

¹⁴C-labelled NaHCO₃ was incorporated into the cellular material, radioactivity being found in all fractions of the cells, with the highest level in the nucleic acid (hot trichloroacetic acid-soluble fraction).

It is a pity that this work was performed using small numbers of different subcultured strains of unspecified CO₂ dependence, unaccompanied by statistical analysis.

D. Wright

Acquired and Natural Immunity to Gonococcal Infection in Chimpanzees

KRAUS, S. J., BROWN, W. J., and ARKO, R. J. (1975) *J. clin. Invest.*, 55, 1349

Gonorrhoea (Therapy)

Genetic Analysis of Drug Resistance in *Neisseria gonorrhoeae*: Identification and Linkage Relationships of Loci Controlling Drug Resistance

MAIER, T. W., ZUBRYZYCKI, L., and COYLE, M. B. (1975) *Antimicrob. Agents Chemother.*, 7, 676

Non-specific genital infection

Quantitative Relationship of *Ureaplasma urealyticum* to the Clinical Course of Non-gonococcal Urethritis in the Human Male

SHEPARD, M. C. (1974) *Inserm*, 33, 375

A treatment regimen for NGU was selected to lead to treatment failure in at least 50 per cent. of cases, thus making it possible to use a quantitative cultural method for *Ureaplasma urealyticum* (better known as T-strain mycoplasma) to follow the clinical course of the disease. The treatments used were either oxytetracycline 250 mg. 6-hrly for 4 days or 250 mg. thrice daily for 3 days. Of 23 patients with NGU, twelve were cured, nine relapsed after 8 to 45 days, and two did not clear at all. Relapse was heralded by a return of positive cultures for *Ureaplasma* and a rising titre in the urine of 10³ to 10⁵ organisms per ml. which was associated with a return of dysuria followed by urethral discharge after an average period of 6.1 days. These patients were re-treated with tetracycline for 10 days and were cured.

It is concluded that the close quantitative relationship of *Ureaplasma urealyticum* with the clinical course of NGU during relapse supports a pathogenic role for the organism in this disease.

G. W. Csonka

Neutralization of *Chlamydia trachomatis* in Cell Culture

HOWARD, L. V. (1975) *Infect. and Immun.*, 11, 698.

Neutralization tests with *C. trachomatis* have been of limited use in the past, because of low or undetectable

activity in sera of vaccinated animals or infected patients. The author here describes a sensitive, possibly complement-mediated neutralization test.

Sera to a Type A and a Type B *C. trachomatis* were raised in rabbits. Dilutions of these antisera, plus 5 per cent. guinea-pig serum (GPS) and growth medium, were incubated with between 2×10^8 and 10^4 inclusion-forming units of *Chlamydia*. Similar experiments were carried out with heat-inactivated GPS, and in the absence of GPS. Uninactivated GPS in the incubation mixture caused considerable enhancement of neutralization titre. Furthermore, sera from trachomatous patients correlated well in the neutralization test, and with the indirect fluorescent antibody test (FA), both in titre and in specificity for Type A or B *C. trachomatis*.

Use of this modification of the neutralization test may demonstrate chlamydial antigens not measured by other immunological tests, possibly acting as a further aid to the study of pathogenicity of *Chlamydia*, and evaluation of the host response to *Chlamydia* infection in man and other animals.

G. L. Ridgway

Infection with *Chlamydia* Group A in Men with Urethritis due to *Neisseria gonorrhoeae*

ORIEL, J. D., REEVE, P., THOMAS, B. J., and NICOL, C. S. (1975) *J. infect. Dis.*, **131**, 376

Men with urethritis due to *Neisseria gonorrhoeae* were treated with gentamicin, which is inactive against *Chlamydia*. Urethral specimens were collected before treatment and 1 and 2 weeks after treatment and cultured for *Chlamydia* in irradiated McCoy cells. The overall incidence of chlamydial infection was fifteen of 44 (34 per cent.). All of fifteen *Chlamydia*-positive men and eleven of 29 *Chlamydia*-negative men (38 per cent.) developed postgonococcal urethritis 2 weeks after treatment. Pre-treatment sera were examined by a complement-fixation test and a simplified indirect fluorescent antibody (FA) test with a yolk sac-cultured antigen, strain SA2(f). Sera from all of fifteen *Chlamydia*-positive men had titres of $\geq 1:16$ in the indirect FA test; thirteen of 29 *Chlamydia*-negative men (45 per cent.) had positive tests. The complement-fixation test was insensitive, detecting chlamydial antibodies in

only one of fifteen sera from *Chlamydia*-positive men. These results suggest that *Chlamydia* may cause many cases of postgonococcal urethritis.

Authors' summary

Chlamydia, Trachoma, Genital Infection, and Psittacosis (1975)

Brit. J. Ophthalmol., **59**, 113 (editorial)

Serotyping of *Chlamydia*: Isolates of Bovine Origin

SCHACHTER, J., BANKS, J., SUGG, N., SUNG, M., STORZ, J., and MEYER, K. F. (1975) *Infect. and Immun.*, **11**, 904

Candidosis

Identifying Yeasts ENGLISH, M. P. (1974) *Med. Lab. Technol.*, **31**, 327

Two keys are presented, based on the revised edition of "The Yeasts" (Lodder, 1970), in an attempt to simplify the identification of medically important yeasts associated with man. Hints on their isolation, morphology, and sexual phase are given. The media and methods in general use for identification tests are also described. Key 1 covers both common and rare yeasts, including a wide range of *Candida* species. Identification is based largely on carbohydrate fermentation and assimilation tests. Key 2 is a shorter version, dealing with yeasts common to man.

B. M. Partridge

Optimum Conditions for Initiation of Filamentation in *Candida albicans*

EVANS, E. G. V., ODDS, F. C., RICHARDSON, M. D., and HOLLAND, K. T. (1975) *Canad. J. Microbiol.*, **21**, 338

Optimum conditions for initiation and development of mycelium from *Candida albicans* blastospores were studied, using a basic Sabouraud's dextrose broth. Equally high growth rates were achieved at 2 and 0.2 per cent. dextrose concentration, with an optimum inoculum of 10^6 blastospores/ml. Temperature and pH were considered to be critical environmental factors affecting mycelium production in liquid media, 40°C. and pH 7.4 giving maximum development in Sabouraud's broth. Reversion to secondary blastospores began at a mean of 2.4 hrs after inoculation. The

pattern of utilization of growth nutrients during optimal development showed no correlation with events of the filamentation cycle. Only trace amounts of the metabolite 2-phenylethanol were detectable in 11-hr culture filtrates.

B. M. Partridge

Routine Use of Modified Sabouraud's Dextrose Broth in the Germ Tube Test for *Candida albicans*

ODDS, F. C., and EVANS, E. G. V. (1975) *Med. Lab. Technol.*, **32**, 23

Sabouraud's dextrose broth, adjusted to a final pH of 7.2, was almost as sensitive and just as specific a test medium as serum in the production of germ tubes from 55 clinical isolates of *Candida albicans*. Other *Candida* isolates (31) and *Torulopsis glabrata* (14) were negative.

B. M. Partridge

Morphological Identification of Pathogenic Yeasts using Carbohydrate Media

JOSHI, K. R., BREMNER, D. A., PARR, D. N., and GAVIN, J. B. (1975) *J. clin. Path.*, **28**, 18

Of various carbohydrate media tested, 0.1 per cent. glucose agar was found to be satisfactory for the development of pseudohyphae by pathogenic yeasts such as *Candida*, identification being made by direct microscopic examination of streak cultures within 48 hrs. 250 yeast isolates were investigated.

B. M. Partridge

Effect of Minocycline on *Candida albicans*

WATERWORTH, P. M. (1974) *J. clin. Path.*, **27**, 269

Minocycline, a new tetracycline derivative, was found to inhibit the growth of *Candida albicans*. Inhibition was much affected by the composition of the medium and was difficult to demonstrate in fluid cultures. Study of the rate of budding in shallow broth cultures in Petri dishes showed that the addition of 20 µg./ml. minocycline prolonged the lag phase by 3 hrs. *C. tropicalis* was similarly inhibited and *C. guilliermondii* and *C. parapsilosis* to a lesser degree. Six other tetracyclines were tested and found to inhibit *Candida* only in very high concentrations.

Author's Summary

Effects of Minocycline and Tetracycline on the Vaginal Yeast Flora ORIEL, J. D., and WATERWORTH, P. M. (1975) *J. clin. Path.*, **28**, 403

Two groups of women with non-specific genital infection were treated for 2 weeks with tetracycline 250 mg. 6-hrly and minocycline 100 mg. twice daily respectively. Cultures for yeasts were performed before treatment and at the end of the first and second weeks. Yeasts, mostly *Candida albicans*, were recovered from 13 per cent of the women before treatment. After 1 and 2 weeks' treatment, yeasts were isolated from 22 and 29 per cent. of women treated with tetracycline, and from 19 and 29 per cent. of women treated with minocycline. It is concluded that, despite inhibition of the growth of yeasts shown by minocycline *in vitro*, there is no evidence of any significant difference between the actions of tetracycline and minocycline on the vaginal yeast flora.

Authors' Summary

Detection of *Candida vaginitis* by a Dipstick Method CORCORAN, L., KENNEY, H., and TILTON, R. C. (1975) *HLth Lab. Sci.*, **12**, 100

Genital herpes

Urinary Retention and Intestinal Obstruction associated with Ano-rectal Herpes Simplex Virus Infection GOLDMEIER, D., BATEMAN, J. R. M., and RODIN, P. (1975) *Brit. med. J.*, **2**, 425

Herpesvirus hominis Infection in Pregnancy TOBIN, J. O'H. (1975) *Proc. roy. Soc. Med.*, **68**, 371

Treatment of Herpes Simplex with Co-Trimoxazole GOSLING, P. H. (1975) *Brit. med. J.*, **2**, 36 (letter)

Antiviral Chemotherapy and Neonatal Herpes Simplex Infection: A Pilot Study—Experience with Adenine Arabinoside (ARA-A) CH'EN, L. T., WHITLEY, R. J., NAHMAS, A. J., LEWIN, E. B., LINNEMANN, C. C., FRENKEL, L. D., BELLANTI, J. A., BUCHANAN, R. A., and ALFORD, C. A. (1975) *Pediatrics*, **55**, 678

Herpes Simplex Virus in Patients with Sarcoidosis; Lymphocyte Transformation *in vitro* and Antibody Response WASSERMAN, N., ITO, M., BARRON, A. L., REISMAN, R. E., and ARBESMAN, C. E. (1975) *N.Y. St. J. Med.*, **75**, 850

Genetic and Biochemical Studies with Herpesvirus SUBAK-SHARPE, J. H., BROWN, S. M., RITCHIE, D. A., TIMBURY, M. C., MACNAB, J. C. M., MARSDEN, H. S., and HAY, J. (1974) *Cold Spring Harbor Symp. Quant. Biol.*, **39**, 717

Demonstration of the Oncogenic Potential of Herpes Simplex Viruses and Human Cytomegalovirus RAPP, F., and LI, J. L. H. (1974) *Cold Spring Harbor Symp. Quant. Biol.*, **39**, 747

Transformation of Cells by Herpes Simplex Virus—Fact or Fantasy? MCAUSLAN, B. R., GARFINKLE, B., ADLER, R., DEVINNEY, D., FLORKIEWICZ, R., and SHAW, J. E. (1974) *Cold Spring Harbor Symp. Quant. Biol.*, **39**, 765

Public health and social aspects

Venereal Disease Control among Homosexuals RITCHEY, M. G., and LEFF, A. M. (1975) *J. Amer. med. Ass.*, **232**, 509

It was noted in Cincinnati in 1973 that the incidence of homosexually acquired syphilis rose from 62 to 83 per cent, while there was a 14 per cent. decline in the number of heterosexual cases. For a homosexual to seek examination for VD there is required an open admission of sexual preference and a need for an understanding attitude by clinic personnel if the patient's return is to be ensured.

With the co-operation of some homosexual organizations, once a week for 4 weeks at a local bar blood samples were taken for a VDRL test, and rectal and pharyngeal cultures were collected on Transgrow and Thayer Martin media. These were processed by the Health Department laboratory. At the same time as specimens were collected, education in VD control was given.

Of 118 blood samples, ten were reactive, none of which were false positive; six were from patients

with previously treated syphilis. Two individuals did not return for their results, but two new cases of primary syphilis were confirmed and treated and contacts traced. No cultures were positive for *N. gonorrhoeae*, although 40 per cent. of pharyngeal cultures yielded other oxidase-positive organisms.

Of the patients tested, 85 per cent. called in for their results. A 4-fold increase in the utilization of the area clinic by homosexuals was noted, and a "Gay Saturday Clinic" was established.

The discovery of two new cases of primary syphilis indicates the value of field screening of a high-risk population.

M. A. Waugh

Miscellaneous

Erythroplasia of Queyrat GOETTE, D. K., ELGART, M., and DE VILLEZ, R. L. (1975) *J. Amer. med. Ass.*, **232**, 934

This 'brief report' describes the clinical features and treatment with topical 5-fluorouracil of three patients with the diagnosis of Queyrat's erythroplasia. The patients were white uncircumcised men aged between 23 and 72 yrs, and the lesions had been present for between 6 mths and 6 yrs. A histological diagnosis was made in each case.

No consistent scheme of treatment appears to have been followed as regards strength of drug and vehicle of administration, and 5-fluorouracil in strengths of between 1 and 5 per cent. was used in liquid, cream, and ointment form. One, two, or three courses of treatment were given to individual patients. Clinical cures were obtained in all three patients, with a normal histology after treatment in two; in the third case, biopsy showed some improvement and treatment was then continued until cure was obtained. The patients were followed for between 20 and 60 mths without evidence of recurrence.

The authors recommend the use of 5-fluorouracil as a 5 per cent. ointment under occlusion in the treatment of the disease. They claim that it is effective and easy to use on out-patients, and leads to a good cosmetic result in contrast to the mutilation caused by other methods of treatment.

The condition is pre-cancerous, and it is only at this stage that topical

chemotherapy with 5-fluorouracil is appropriate; hence the importance of histological examination before treatment.

N. A. Durham

Role of Fomites in the Transmission of Vaginitis

ANDREW, D. E., BUNSTEAD, E., and KEMPTON, A. G. (1975) *Canad. med. Ass. J.*, **112**, 1181

A group of 102 students in a Canadian university campus who had sympto-

matic vaginitis was studied. *Candida albicans* was the commonest pathogen, being recovered from 28 specimens. *Escherichia coli*, *Streptococcus pyogenes*, and *Haemophilus vaginalis* were obtained from 27, 18, and 11 cultures respectively. No isolations of *Trichomonas vaginalis* were obtained.

An attempt was made to isolate micro-organisms from 140 swabs taken from lavatory seats and bathtubs used by the female students on the campus. The most prevalent

organisms were staphylococci. *Candida albicans* was never isolated, and the authors conclude from this limited study that there is no evidence that fomites play any part in the transmission of vaginal infections.

D. H. Jackson

Behçet's Disease and the Alimentary Tract

PARKIN, J. V., and WRIGHT, D. G. D. (1975) *Postgrad. med. J.*, **51**, 260